

Amendments to the Claims:

The following listing of claims replaces all prior listings, and all prior versions, of claims in the application:

Listing of Claims:

1. (Original) An agent for prevention and/or treatment of asthma, which comprises, as an active ingredient, a substance capable of suppressing the function involved in signal transduction of a protein having the amino acid sequence represented by SEQ ID NO: 11.

2. (Original) An agent for prevention and/or treatment of asthma, which comprises one of the following 1) to 4) as an active ingredient:

1) an oligonucleotide having a sequence complementary to that of oligonucleotide comprising continuous 5 to 60 nucleotides selected from the nucleotide sequence represented by SEQ ID NO: 12 or a derivative of said oligonucleotide,

2) an oligonucleotide having a sequence complementary to that of oligonucleotide comprising continuous 5 to 60 nucleotides selected from the nucleotide sequence represented by SEQ ID NO: 14 or a derivative of said oligonucleotide,

3) an oligonucleotide having a sequence complementary to that of oligonucleotide comprising continuous 5 to 60 nucleotides selected from the nucleotide sequence represented by SEQ ID NO: 18 or a derivative of said oligonucleotide, and

4) an oligonucleotide comprising 5 to 60 nucleotides which hybridizes under stringent conditions with DNA having the nucleotide sequence represented by one

member selected from SEQ ID NOs: 12, 14 and 18 and which is capable of suppressing the function involved in signal transduction of protein having the amino acid sequence represented by SEQ ID NO: 11 or a derivative of said oligonucleotide.

3. (Original) An agent for prevention and/or treatment of asthma, which comprises one of the following 1) to 4) as an active ingredient:

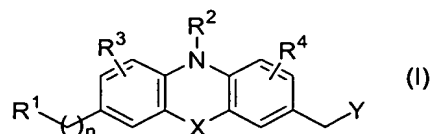
1) an antibody which recognizes a protein having the amino acid sequence represented by SEQ ID NO: 11,

2) an antibody which recognizes a protein having the amino acid sequence represented by SEQ ID NO: 13,

3) an antibody which recognizes a protein having the amino acid sequence represented by SEQ ID NO: 17, and

4) an antibody, which recognizes a protein having the amino acid sequence in which one or more amino acid(s) is/are deleted, substituted or added in the amino acid sequence represented by one member selected from SEQ ID NOs:11, 13 and 17 and which has the function involved in signal transduction of a protein having the amino acid sequence represented by SEQ ID NO:11.

4. (Original) An agent for prevention and/or treatment of asthma, which comprises a nitrogen-containing tricyclic compound represented by the formula (I) or a quaternary ammonium salt thereof, or a pharmaceutically acceptable salt thereof;



[wherein R¹ represents a substituted or unsubstituted heterocyclic group, -NR⁵R⁶ (wherein R⁵ and R⁶ are the same or different and each represents hydrogen,

substituted or unsubstituted lower alkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted lower alkenyl, substituted or unsubstituted lower alkynyl, substituted or unsubstituted aralkyl or substituted or unsubstituted heterocyclic alkyl, or R^5 and R^6 are combined together with the adjacent nitrogen atom to form a substituted or unsubstituted heterocyclic group), $-OR^7$ (wherein R^7 represents hydrogen, substituted or unsubstituted lower alkyl, substituted or unsubstituted lower alkanoyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted lower alkenyl, substituted or unsubstituted lower alkynyl, substituted or unsubstituted aryl, substituted or unsubstituted aralkyl or substituted or unsubstituted heterocyclic alkyl), $-SR^{7a}$ (wherein R^{7a} has the same meaning as the above R^7), $-CONR^{5a}R^{6a}$ (wherein R^{5a} and R^{6a} have the same meanings as the above R^5 and R^6 , respectively), $-CO_2R^{7b}$ (wherein R^{7b} has the same meaning as the above R^7), $-N^+R^{5b}R^{6b}R^8$ (wherein R^{5b} and R^{6b} have the same meanings as the above R^5 and R^6 , respectively, and R^8 represents lower alkyl, lower alkenyl or aralkyl), formyl, carboxy or cyano;

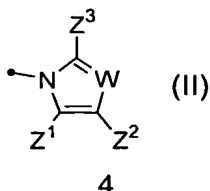
R^2 represents hydrogen, substituted or unsubstituted lower alkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted lower alkenyl, substituted or unsubstituted lower alkynyl, substituted or unsubstituted aralkyl or substituted or unsubstituted heterocyclic alkyl;

R^3 and R^4 are the same or different and each represents hydrogen, lower alkyl or halogen;

n represents 0 or 1;

X represents $-(CH_2)_2-$ or $-CH=CH-$; and

Y represents the formula (II);



(wherein W represents CH or a nitrogen atom;

Z¹ and Z² are the same or different and each represents hydrogen, substituted or unsubstituted lower alkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted lower alkenyl, substituted or unsubstituted lower alkynyl, substituted or unsubstituted aryl, substituted or unsubstituted aralkyl or substituted or unsubstituted heterocyclic alkyl, or Z¹ and Z² are combined together with two carbon atoms being adjacent to each of them to form a substituted or unsubstituted aromatic ring or substituted or unsubstituted heterocycle; and

Z³ represents hydrogen, substituted or unsubstituted lower alkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted lower alkenyl, substituted or unsubstituted lower alkynyl, substituted or unsubstituted aryl, a substituted or unsubstituted heterocyclic group, substituted or unsubstituted aralkyl or substituted or unsubstituted heterocyclic alkyl)] as an active ingredient.

5. (Original) The agent for prevention and/or treatment of asthma according to claim 4, wherein R¹ is -NR⁵R⁶ and R⁵ and R⁶ are combined together with the adjacent nitrogen atom to form a substituted or unsubstituted heterocyclic group.

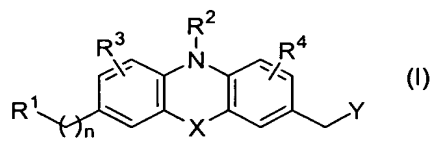
6. (Previously Presented) The agent for prevention and/or treatment of asthma according to claim 4, wherein R² is hydrogen.

7. (Previously Presented) The agent for prevention and/or treatment of asthma according to claim 4, wherein R³ and R⁴ are hydrogen.

8. (Previously Presented) The agent for prevention and/or treatment of asthma according to claim 4, wherein Z¹ and Z² are combined together with two

carbon atoms being adjacent to each of them to form substituted or unsubstituted heterocycle.

9. (Currently Amended) A method for prevention and/or treatment of asthma, which comprises administering an effective amount of ~~the nitrogen-containing tricyclic compound or the quaternary ammonium salt thereof, or the pharmaceutically acceptable salt thereof described in claim 4a~~ nitrogen-containing tricyclic compound represented by the formula (I) or a quaternary ammonium salt thereof, or a pharmaceutically acceptable salt thereof;



[wherein R¹ represents a substituted or unsubstituted heterocyclic group, -NR⁵R⁶ (wherein R⁵ and R⁶ are the same or different and each represents hydrogen, substituted or unsubstituted lower alkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted lower alkenyl, substituted or unsubstituted lower alkynyl, substituted or unsubstituted aralkyl or substituted or unsubstituted heterocyclic alkyl, or R⁵ and R⁶ are combined together with the adjacent nitrogen atom to form a substituted or unsubstituted heterocyclic group), -OR⁷ (wherein R⁷ represents hydrogen, substituted or unsubstituted lower alkyl, substituted or unsubstituted lower alkanoyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted lower alkenyl, substituted or unsubstituted lower alkynyl, substituted or unsubstituted aryl, substituted or unsubstituted aralkyl or substituted or unsubstituted heterocyclic alkyl), -SR^{7a} (wherein R^{7a} has the same meaning as the above R⁷), -CONR^{5a}R^{6a} (wherein R^{5a} and R^{6a} have the same meanings as the above R⁵ and R⁶, respectively).

-CO₂R^{7b} (wherein R^{7b} has the same meaning as the above R⁷), -N⁺R^{5b}R^{6b}R⁸

(wherein R^{5b} and R^{6b} have the same meanings as the above R⁵ and R⁶, respectively,
and R⁸ represents lower alkyl, lower alkenyl or aralkyl), formyl, carboxy or cyano;

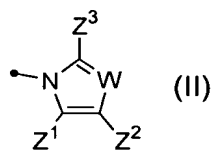
R² represents hydrogen, substituted or unsubstituted lower alkyl, substituted
or unsubstituted cycloalkyl, substituted or unsubstituted lower alkenyl, substituted or
unsubstituted lower alkynyl, substituted or unsubstituted aralkyl or substituted or
unsubstituted heterocyclic alkyl;

R³ and R⁴ are the same or different and each represents hydrogen, lower
alkyl or halogen;

n represents 0 or 1;

X represents -(CH₂)₂- or -CH=CH-; and

Y represents the formula (II);



(wherein W represents CH or a nitrogen atom;

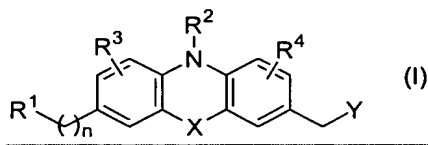
Z¹ and Z² are the same or different and each represents hydrogen, substituted or
unsubstituted lower alkyl, substituted or unsubstituted cycloalkyl, substituted or
unsubstituted lower alkenyl, substituted or unsubstituted lower alkynyl, substituted or
unsubstituted aryl, substituted or unsubstituted aralkyl or substituted or unsubstituted
heterocyclic alkyl, or Z¹ and Z² are combined together with two carbon atoms being
adjacent to each of them to form a substituted or unsubstituted aromatic ring or
substituted or unsubstituted heterocycle; and

Z³ represents hydrogen, substituted or unsubstituted lower alkyl, substituted or
unsubstituted cycloalkyl, substituted or unsubstituted lower alkenyl, substituted or
unsubstituted lower alkynyl, substituted or unsubstituted aryl, a substituted or

unsubstituted heterocyclic group, substituted or unsubstituted aralkyl or substituted or unsubstituted heterocyclic alkyl)] as an active ingredient.

10. (Currently Amended) ~~Use of the nitrogen-containing tricyclic compound or the quaternary ammonium salt thereof, or the pharmaceutically acceptable salt thereof described in claim 4 for the manufacture of~~A method of manufacturing an agent for prevention and/or treatment of asthma, comprising:

incorporating in the agent a nitrogen-containing tricyclic compound represented by the formula (I) or a quaternary ammonium salt thereof, or a pharmaceutically acceptable salt thereof;



[wherein R¹ represents a substituted or unsubstituted heterocyclic group, -NR⁵R⁶ (wherein R⁵ and R⁶ are the same or different and each represents hydrogen, substituted or unsubstituted lower alkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted lower alkenyl, substituted or unsubstituted lower alkynyl, substituted or unsubstituted aralkyl or substituted or unsubstituted heterocyclic alkyl, or R⁵ and R⁶ are combined together with the adjacent nitrogen atom to form a substituted or unsubstituted heterocyclic group), -OR⁷ (wherein R⁷ represents hydrogen, substituted or unsubstituted lower alkyl, substituted or unsubstituted lower alkanoyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted lower alkenyl, substituted or unsubstituted lower alkynyl, substituted or unsubstituted aryl, substituted or unsubstituted aralkyl or substituted or unsubstituted heterocyclic alkyl), -SR^{7a} (wherein R^{7a} has the same meaning as the above R⁷), -CONR^{5a}R^{6a} (wherein R^{5a} and R^{6a} have the same meanings as the above R⁵ and R⁶, respectively).

-CO₂R^{7b} (wherein R^{7b} has the same meaning as the above R⁷), -N⁺R^{5b}R^{6b}R⁸

(wherein R^{5b} and R^{6b} have the same meanings as the above R⁵ and R⁶, respectively,

and R⁸ represents lower alkyl, lower alkenyl or aralkyl), formyl, carboxy or cyano;

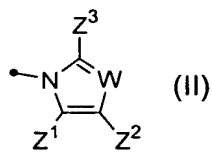
R² represents hydrogen, substituted or unsubstituted lower alkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted lower alkenyl, substituted or unsubstituted lower alkynyl, substituted or unsubstituted aralkyl or substituted or unsubstituted heterocyclic alkyl;

R³ and R⁴ are the same or different and each represents hydrogen, lower alkyl or halogen;

n represents 0 or 1;

X represents -(CH₂)₂- or -CH=CH-; and

Y represents the formula (II);



(wherein W represents CH or a nitrogen atom;

Z¹ and Z² are the same or different and each represents hydrogen, substituted or unsubstituted lower alkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted lower alkenyl, substituted or unsubstituted lower alkynyl, substituted or unsubstituted aryl, substituted or unsubstituted aralkyl or substituted or unsubstituted heterocyclic alkyl, or Z¹ and Z² are combined together with two carbon atoms being adjacent to each of them to form a substituted or unsubstituted aromatic ring or substituted or unsubstituted heterocycle; and

Z³ represents hydrogen, substituted or unsubstituted lower alkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted lower alkenyl, substituted or unsubstituted lower alkynyl, substituted or unsubstituted aryl, a substituted or

unsubstituted heterocyclic group, substituted or unsubstituted aralkyl or substituted or unsubstituted heterocyclic alkyl)] as an active ingredient.

11. (Original) A method for prevention and/or treatment of asthma, which comprises administering a therapeutically effective amount of a substance capable of suppressing the function involved in signal transduction of a protein comprising the amino acid sequence represented by SEQ ID NO: 11.

12. (Original) A method for prevention and/or treatment of asthma, which comprises administering a therapeutically effective amount of an oligonucleotide or a derivative of said oligonucleotide which is any one of 1) to 4) described in claim 2.

13. (Original) A method for prevention and/or treatment of asthma, which comprises administering a therapeutically effective amount of an antibody which is any one of 1) to 4) described in claim 3.

14. (Original) Use of a substance capable of suppressing the function involved in signal transduction of a protein having the amino acid sequence represented by SEQ ID NO: 11 for the manufacture of an agent for prevention and/or treatment of asthma.

15. (Original) Use of an oligonucleotide or a derivative of said oligonucleotide which is any one of 1) to 4) described in claim 2 for the manufacture of an agent for prevention and/or treatment of asthma.

16. (Original) Use of an antibody which is any one of 1) to 4) described in claim 3 for the manufacture of an agent for prevention and/or treatment of asthma.

17. (New) The method of manufacturing an agent for prevention and/or treatment of asthma according to claim 10, wherein said incorporating includes compounding said nitrogen-containing tricyclic compound or the quaternary ammonium compound or the pharmaceutically acceptable salt thereof with a carrier.

18. (New) The method of manufacturing an agent for prevention and/or treatment of asthma according to claim 10, wherein R^1 is $-NR^5R^6$ and R^5 and R^6 are combined together with the adjacent nitrogen atom to form a substituted or unsubstituted heterocyclic group.

19. (New) The method of manufacturing an agent for prevention and/or treatment of asthma according to claim 10, wherein R^2 is hydrogen.

20. (New) The method of manufacturing an agent for prevention and/or treatment of asthma according to claim 10, wherein R^3 and R^4 are hydrogen.

21. (New) The method of manufacturing an agent for prevention and/or treatment of asthma according to claim 10, wherein Z^1 and Z^2 are combined together with two carbon atoms being adjacent to each of them to form substituted or unsubstituted heterocycle.

22. (New) A method for prevention and/or treatment of asthma according to claim 9, wherein R^1 is $-NR^5R^6$ and R^5 and R^6 are combined together with the adjacent nitrogen atom to form a substituted or unsubstituted heterocyclic group.

23. (New) A method for prevention and/or treatment of asthma according to claim 9, wherein R^2 is hydrogen.

24. (New) A method for prevention and/or treatment of asthma according to claim 9, wherein R^3 and R^4 are hydrogen.

25. (New) A method for prevention and/or treatment of asthma according to claim 9, wherein Z^1 and Z^2 are combined together with two carbon atoms being adjacent to each of them to form substituted or unsubstituted heterocycle.